

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

Claim 23 has been amended to recite a photographing apparatus comprising a control unit which controls capture of images in one of a spectroscopic image capturing mode and a moving image capturing mode, and wherein in the moving image capture mode, the control unit one of: (i) controls a single specific primary color or a plurality of specific primary colors of the light-emitting devices selected from the plurality of light emitting devices to sequentially or simultaneously light-on, and controls the image pick-up device unit to capture a moving image while the specific primary color of the light-emitting devices are lighted-on, and (ii) controls a plurality of groups of the light-emitting devices to sequentially light-on group by group.

In addition, claim 23 has been amended to recite that the groups include a group of the light-emitting devices that belong to blue in the visible light range, a group of the light-emitting devices that belong to green in the visible light range, and a group of the light-emitting devices that belong to red in the visible light range.

In other words, claim 23 has amended to more clearly recite the manner in which the plurality of different-colored groups of light-emitting devices are sequentially lit group by group. This aspect of the present invention is described in the specification at, for example, page 29, lines 6-14, and it is respectfully submitted that amended claim 23 is fully supported by the written description in the specification as required by 35 USC 112, first paragraph.

Claims 26 and 29-38, moreover, have been amended to be consistent with the changes to claim 23, and claims 24, 25, 27, 28 and 39-41 have been canceled, without prejudice.

Still further, new claim 42 has been added to recite an image processing system including a photographing apparatus having the features set forth in amended claim 23, and a processing apparatus having the features previously set forth in claim 23.

Yet still further, new claims 43-45 have been added to recite subject matter previously set forth in claims 39-41, respectively, depending from new claim 42.

It is respectfully submitted that no new matter has been added, it is respectfully requested that the amendments to the claims be approved and entered, and that the rejection under 35 USC 112, first paragraph, be withdrawn.

THE PRIOR ART REJECTION

Claim 23-41 all rejected under 35 USC 103 as being obvious in view of various combinations of USP 5,523,786 ("Parulski"), US 2005/0084144 ("Feldman"), USP 5,766,006 ("Murljacic"), USP 6,006,041 ("Mizumaki et al"), US 2003/0107652 ("Williams"), US 2002/0168784 ("Sundrehagen et al"), USP 7,144,248 ("Irwin"), and US 2005/0231592 ("Cable et al"). These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

The present invention as recited in independent claim 23 is directed to a photographing apparatus comprising a plurality of light-emitting devices for emitting illumination light having characteristics of spectroscopic distributions varied in at least a visible light range, an image pick-up optical system which forms a subject image of a subject illuminated by the light-emitting devices, an image pick-up device unit which picks-up the subject image formed by the image pick-up optical system and outputs an image signal, and a control unit which controls the photographing apparatus to capture images in one of a spectroscopic image capturing mode and a moving image capturing mode. As recited in amended claim 23, in the spectroscopic image capturing mode, the control unit controls the plurality of light-emitting devices to sequentially light-on, and the control unit controls the image pick-up device unit to capture sequential

spectroscopic still images of the subject simultaneously with the sequential lighting-on of the light-emitting devices. In addition, as recited in amended claim 23, in the moving image capture mode, the control unit one of: (i) controls a single specific primary color or a plurality of specific primary colors of the light-emitting devices selected from the plurality of light emitting devices to sequentially or simultaneously light-on, and controls the image pick-up device unit to capture a moving image while the specific primary color of the light-emitting devices are lighted-on, and (ii) controls a plurality of groups of the light-emitting devices to sequentially light-on group by group, wherein the groups include a group of the light-emitting devices that belong to blue in the visible light range, a group of the light-emitting devices that belong to green in the visible light range, and a group of the light-emitting devices that belong to red in the visible light range, and controls the image pick-up device unit to capture a moving image while the groups of the light-emitting devices are sequentially lighted-on.

New independent claim 42, moreover, recites the same features with respect to an image processing system including the photographing apparatus of amended claim 23.

Thus, with the structure of the claimed present invention, the control unit controls the lighting-on of different color light-emitting devices relative to the image capture mode, i.e.,

a spectroscopic image capturing mode or a moving image capturing mode, in a unique manner to enable improved capture of images in both image capture modes. Specifically, in the moving image capturing mode, the control unit controls a single specific primary color or a plurality of specific primary colors of the light-emitting devices to sequentially or simultaneously light-on, as disclosed in the specification at page 32, lines 2-13 and page 33, lines 6-8. Additionally, the control unit controls a plurality of groups of the light-emitting devices to sequentially light-on group by group, with these groups including a group of blue light devices, a group of green devices and a group of red devices, as disclosed in the specification at, for example, page 29, lines 6-14 and page 31, line 24 to page 32, line 1.

It is respectfully submitted that the prior art references do not disclose or suggest a control unit which controls different light-emitting devices in the above described manner of the claimed present invention.

Parulski discloses a color sequential electronic camera including camera head 20 having Red, Green and Blue light emitting devices (LEDs) 26a, 26b, 26c, respectively, which are sequentially driven by an LED control device 28, and a timing circuit 40 which controls the light emitting devices 26a, 26b, 26c via the LED control device 28. In Parulski, the illumination time period and light emission pattern of the LEDs 26a, 26b, 26c

are switched depending on the distance between the object and the light source.

Feldman discloses a three-dimensional (3D) imager 1310 for generating a 3D image 1302 (100) of a tooth impression and 3D image 1304 (200) of a jaw impression, and an image processor 1314 which recognizes an image separator, superimposes the 3D image 1302 on the 3D image 1304, and performs image registration. In Feldman, an image separator represents a separation plane 216 which separates a jaw bone image 212 and a negative impression template image 114 in the 3D image 200.

Murljacic discloses a halogen lamp light source in an intraoral camera system 10, and an external source 94, such as a lamp which is connected to camera 80, as light sources for illuminating a tooth.

It is respectfully submitted, however, that in contrast to the claimed present invention, Parulski, Feldman and Murljacic do not disclose a photographing apparatus having a plurality of different color LEDs which are controlled such that lighting-on of all of the primary colors of the LEDs and lighting-on of a part of the primary colors are lit-on in different ways depending on an image capturing mode of the photographing apparatus (i.e., either a spectroscopic image capturing mode or a moving image capturing mode). In addition, it is respectfully submitted that the cited references do not disclose or suggest that LEDs are

controlled such that in a moving image capturing mode, a plurality of groups of LEDs (e.g., a blue group, a red group and a green group) are sequentially lighted-on group by group, as according to the claimed present invention.

Additionally, with respect to Feldman, it is respectfully pointed out that the images 1302, 1304 (or 114, 212) do not constitute a spectroscopic image or moving image as alleged by the Examiner. Therefore, it is respectfully submitted that Feldman does not disclose or suggest controlling a photographing apparatus to capture images in one of a spectroscopic image capturing mode and a moving image capturing mode.

Still further, it is respectfully submitted that Mizumaki et al, Williams, Sundrehagen et al, Irwin and Cable et al also fail to disclose or suggest a photographing apparatus having a plurality of different color LEDs which are controlled such that lighting-on of all of the primary colors of the LEDs and lighting-on of a part of the primary colors are lit-on in different ways depending on the image capturing mode of the photographing apparatus, as according to the claimed present invention.

In view of the foregoing, it is respectfully submitted that the present invention as recited in amended independent claim 23 and new independent claim 42, and claims 26, 29-38 and 43-45 depending therefrom, clearly patentably distinguishes over all of

the cited references, taken singly or in any combination
consistent with the respective fair teachings thereof, under
35 USC 103.

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Entry of this Amendment, allowance of the claims and the
passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or
recommendations, the Examiner is invited to telephone the
undersigned at the telephone number given below for prompt
action.

Respectfully submitted,

/Douglas Holtz/

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